

From the house of Amar Chitra Katha and Tinkle

# BRAINWAVE™

SCIENCE IS JUST A GAME

Vol. 02 Issue 11  
November 2013  
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## BEHIND THE SCENES



This is how a typical day at the Brainwave office is. Art by Jeenal Patel  
Let us know your thoughts at [brainwave@ack-media.com](mailto:brainwave@ack-media.com)

Artwork: Jeenal Patel; BW headquarters

# BRAINWAVE™

Vol. 02 | Issue 11 | November 2013

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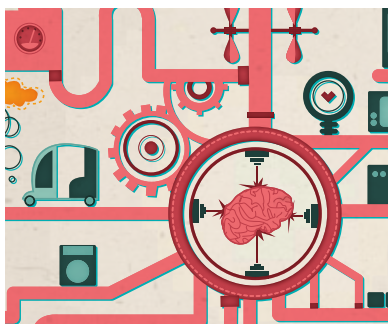
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In which we travel to a future of artificial intelligence, get arrested by robocops and enter the room of requirements to know how today's science is tomorrow's technology ...



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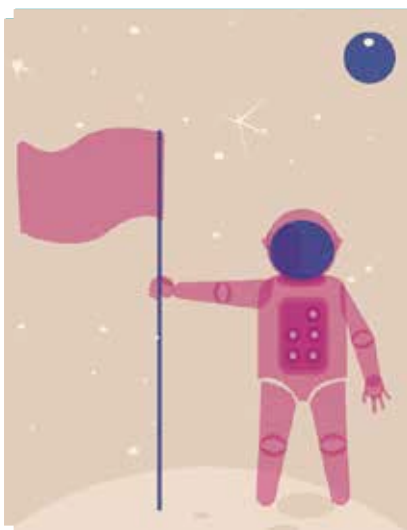


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# MEET THE SMARTIES



**Dr. Dodo:** Dr. Dodo is the co-founder of BW Labs and is the last living dodo. He holds a Ph.D in anachronomaly and parallel universes from the University of Clockwindistan. He invented the Galileo series of time machines.



**Skree!:** Skree! is the other founder of BW Labs. She loves dangerous experiments. She makes mini black holes before breakfast and has dark matter for lunch.



**Arby:** Arby is a genius who will grow up to be Aryabhata. He came to the future, thanks to Dr. Dodo's time machine. He is a fan of numbers, banana fritters and robot wars.



**Mr X:** Mr. X, short for Xavier, was once Dr. Dodo's student. X is as brilliant as Alby and Arby, and by virtue of his knowledge of science, as powerful as Bhoo when the situation demands.



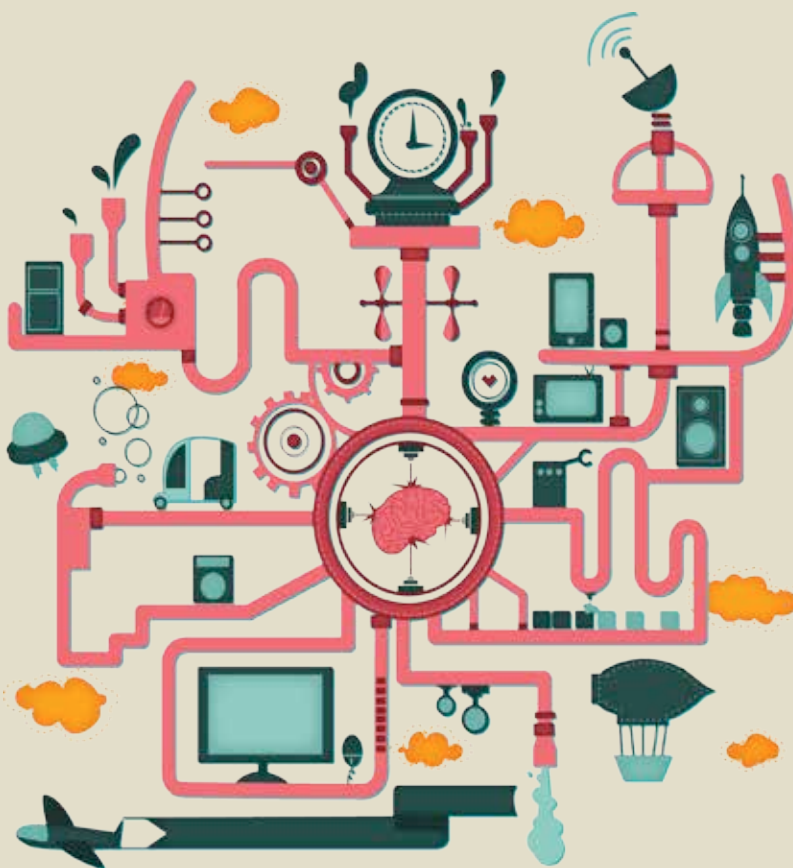
**Bhoomi:** Bhoomi, a.k.a. Bhoo, is an enigma. No one knows where she is from and how she came into being. She is made up of earth, wind, fire, and water in equal parts. Her alter-ego is Gaia Goel, a world famous science sleuth.

**Alby:** Alby will grow up to be Albert Einstein. However, now, like Arby, he too has been sucked into the future. When he is not researching, he plays the violin.





# SCIENCE IS OUR BACKBONE!



To acknowledge this, we at the Brainwave HQ decided that all readers ought to know the significance of technology. You need to know how science translate into the luxuries you enjoy - fridges, ACs, TVs, computers, smartphones, touchpads, video games, movies and much more!

We will show you what technology has done for us and what we might experience in the mysterious future.

Be ready to be amazed, since every piece of technology is directly or indirectly linked to your textbook lessons!

**How, you ask?** Well, would any technology exist without science and maths? No.

Whether you choose to be aware of this fact and study well or not is up to you. But for now, enjoy the ride! ■

DO you know? *Sixth sick sheik's sixth sheep's sick* is considered the toughest tongue twister! Try it.  
- **Team Brainwave**

**I**f you are able to read this today, you should know that centuries of technological advancements are making it possible - the printing press, the delivery vehicles and

computers that allow us to write and illustrate for you! Without technology, we would not have been able to reach out to so many of you across the globe, month-on-month.





# Salt-Water Electricity

by Kayomarz Bacha



## You will need:

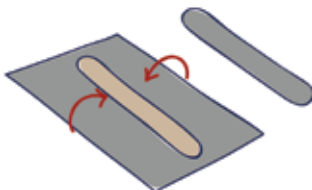
- A cup of glass
- Electrical tape
- Insulated copper wire (available at any electrical store)
- Salt
- 9 volt battery
- Aluminium foil (available in supermarkets)
- LED light or a zero watt bulb with a holder
- Icecream sticks
- Water

**Caution:** Perform under adult supervision. Don't play with electricity.

## Method:

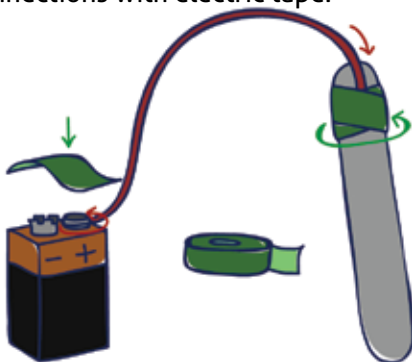
### Step 1

Wrap both the ice cream sticks with the foil. These will act as your electrodes.



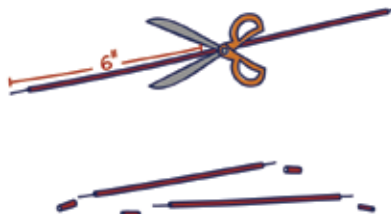
### Step 3

Connect one end of a wire to one electrode and the other end to the positive end of the battery. Secure the connections with electric tape.



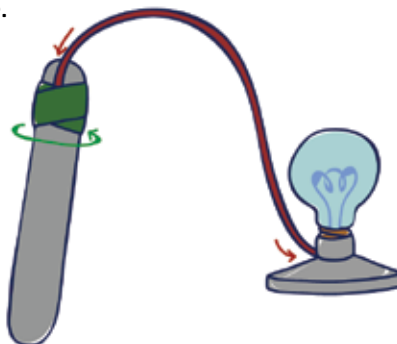
### Step 2

Cut three 6-inch pieces of insulated copper wire and strip off half-inch insulation from each end.



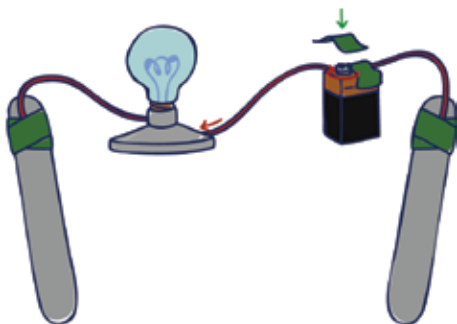
### Step 4

Connect one end of the second wire to the second electrode and the other end to the led light or bulb with holder. Secure the connections with tape.



### Step 5

Use the third piece of wire to connect the bulb and the negative end of the battery. Secure the connections with tape.



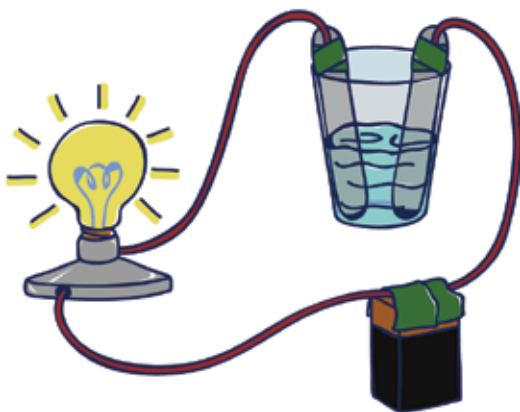
### Step 6

Take a glass of water, add 2-3 spoons of salt and stir well till the salt dissolves completely.



### Step 7

Insert both the electrodes into the salt water, as shown. Ensure that the electrodes do not touch each other.



Your toy is ready! Sit back and watch the bulb light up.

Salt water is a good conductor of electricity. This experiment is a great example of that.

Salt is nothing but sodium chloride ( $\text{NaCl}$ ). Its molecules are made of sodium and chlorine. When salt is mixed with water, sodium and chlorine ions are created i.e. sodium loses an electron and becomes positive in charge, while chlorine gains an extra electron and becomes negative in charge.

The light bulb lights up because the sodium and chlorine ions conduct electricity from one electrode to the other. This completes the circuit.

The essence of the above explanation is that an 'invisible wire' is formed in the salt-water solution that allows electrons to move around in the water, conducting electricity. ■

Will the bulb shine brighter if you add more salt to the water? Why? Research and email your answers to [brainwave@ack-media.com](mailto:brainwave@ack-media.com). The best answer wins a cool ACK comic book!

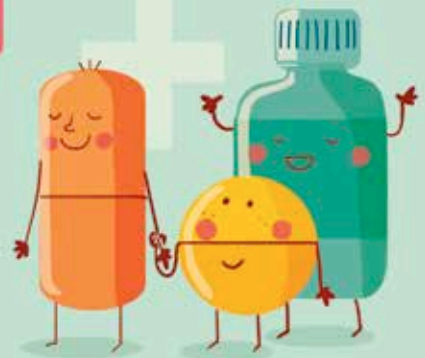
## Evolution of Medicine and Surgery

Written By : Sasikanth C & Priyanka T

Artwork By: Parvati Pillai

Did you know that medicine got a complete makeover? No kidding! It was in the 19th century that the way of practicing medicine changed rapidly. The credit goes to advancements in science and technology.

This was when new techniques like anaesthesia were adopted, and operation theatres were set-up. Permanent cures started coming along for certain **endemic** infectious diseases and hospitals began a systematic analysis of patients' symptoms in diagnosis.



HELLOOOO!!!



But the field of medicine did not know that much more than a makeover lay ahead. Advances in chemistry, laboratory techniques and equipment completely changed things.

The invention of the microscope caused Antonie Van Leeuwenhoek to observe that bacteria and microorganisms existed. This discovery made in 1676, initiated the scientific field of microbiology.

The next big thing that happened to medicine was the introduction of statistical maps and graphs. This allowed careful analysis of seasonality issues in diseases. Critical points from which various diseases spread could be identified and treated.

Soon, medicine got a unique European touch. European idea of modern medicine spread widely through the world through medical missionaries, and the distribution of textbooks. Reforms in military and civilian hospitals were rolled out with the full support of governments.

Go, medicine ... go!



In the late 19th century, medicine did the unbelievable. It freed the world of lunacy! Lunacy was accepted as a medical condition and psychiatry came into being. Drugs for mental conditions were designed in laboratories and came into preferred use.



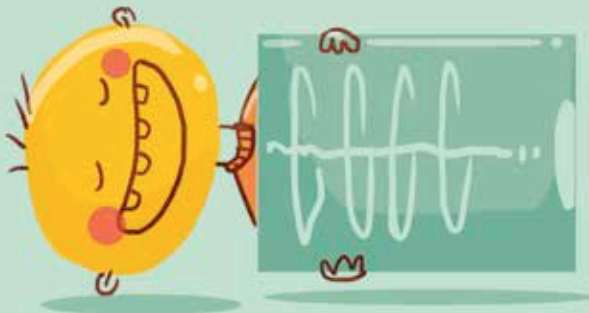


In 1948, a superhero in the field of medicine was born in the form of the World Health Organization (WHO). This organization pledged to improve global health and in fact, did a very good job of it! In most parts of the world, life expectancy improved since WHO came into the picture.

Several new vaccines have been developed against infections such as measles, mumps and influenza. Smallpox was finally eradicated in the 1970s. Eradication of major diseases like polio and malaria is also underway! Cholera and other diarrhoea-inducing infections have been extensively addressed.



Next came the feather in the hat - the discovery of medical imaging through x-ray and later, ultrasonic, CTG, MRIG and other imaging methods. This changed the way of looking at detection completely. Cancer treatment got a major push too, with the development of radiotherapy, chemotherapy and surgical **oncology<sup>G</sup>**.



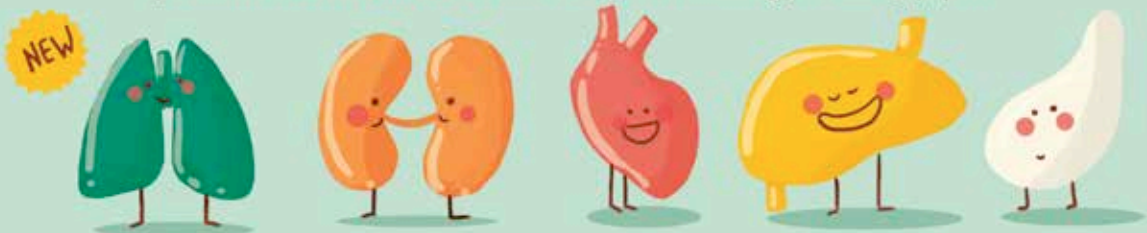
Today, medicine has made the world a much better place. The science of genetics has advanced with the discovery of the DNA molecule, genetic mapping and gene therapy. Stem cell research that took off in the 2000s is a landmark in itself.

**Prosthetics<sup>G</sup>** and **neuroprosthetics<sup>G</sup>** have also improved with the use of lightweight materials.



We now bring to you, the latest and most powerful achievements of medicine!

Cardiac surgery was revolutionised in the late 1940s, as open-heart surgery was introduced. The first kidney transplantation was accomplished in 1958. Transplantations of other organs, such as heart, liver and pancreas, were also introduced during the latter 20th century. The first full face transplant was performed in 2010. **Bionics<sup>G</sup>** are now slowly, but increasingly becoming popular.



Hurray! Medicine has clearly evolved. But before you clap for the life-saving field, let's look at this:

By the end of the 20th century, microtechnology was being used to create tiny robotic devices to assist in surgery, using micro-video and fibre-optic cameras! **Laparoscopic surgery<sup>G</sup>**, **Natural orifice surgery<sup>G</sup>** and **Remote surgery<sup>G</sup>** have begun helping the human race more than we could ever imagine. We can now comfortably say that the medical industry is so strong that it has become the backbone of all mankind - after all, there is no wealth without good health, right?

You may now clap for medicine. On second thoughts, why not give it a standing ovation?

The End.



A lot of what we see in films today is CGI (Computer Generated Imagery)- from landscapes and buildings, to textures and animated characters. This saves time, is cost effective and gives filmmakers more freedom. CGI is easier to control than real actors, sets or physically created visual effects.



Cloud computing is web-based processing, whereby shared resources, software and information are provided to computers and other devices (like smart phones) on demand, over the internet. This means that you need not have huge storage devices like hard disks and pen drives and yet, enjoy everything. You need to have a very speedy internet connection, though. Google drive attached to your gmail account is an example of this.



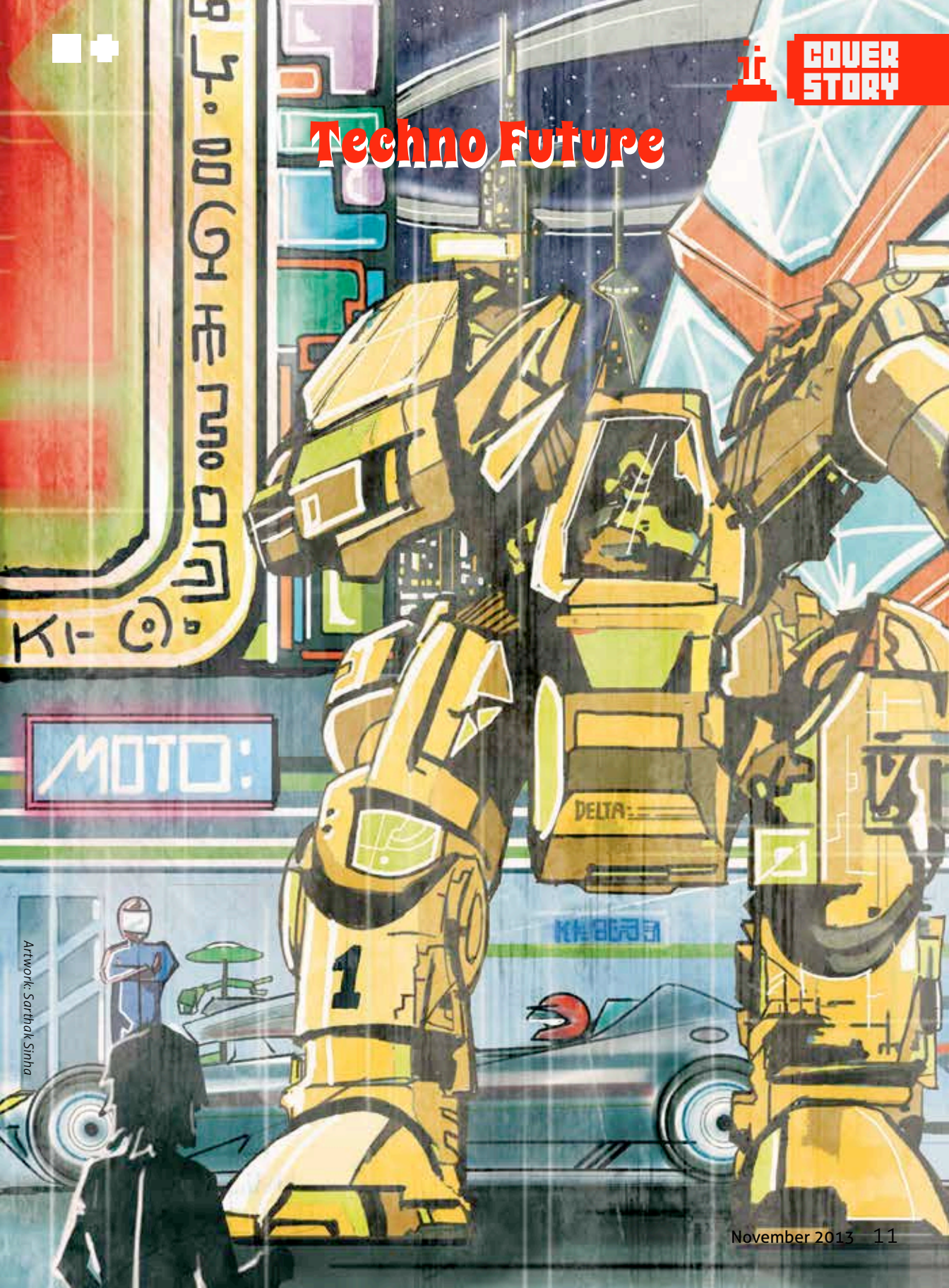
The story of spam began when a group of four hundred unsuspecting people received an advertisement in their email inboxes, sent out by Gary Thuerk, marketing manager of Digital Equipment Corporation. Gary soon came to be known as the 'Father of Spam'.





COVER  
STORY

# Techno Future



Artwork: Sathak Sinha



# Techno Future – An incident at the Brainwave headquarters

by Priyanka Talreja

*Dear readers, let us begin by telling you that this article is a narration from our resident geek – Kayo. Buried deep in the 'Top Secret' folder, this narration is highly confidential. Now, we have decided that our readers should know about this incident. Before you start reading, be prepared to get completely blown away as the unexpected unfolds right here!*

**T**hat day began like any other. I sat at my desk fidgeting and experimenting. I was working hard to finish the invisibility shield for my time machine. All things were in place. Just a little more assembling and the machine would be ready. I made a few tweaks, set up the electrical connections and there, it was ready - to be tested before actually using it.

Suddenly, the machine came to life. This was unexpected - I hadn't activated it! I tried to hit the stop button, but felt a sharp pain run right through

my body before I could do that.

This pain was so intense that my mind went numb. The last thing I remembered was a deep sinking feeling. I blacked out.

When I woke up, my mind was completely disoriented. I did not remember what had happened or for how long I had been lying on the floor in my office. My vision was blurred.

It took me a while to organize my mind and get up. Something had changed. No, everything had changed. Where was I? Was this our office? I also spotted the time machine. It looked like a much advanced version of what I had invented. I also saw the photo frame of my family on what looked like my desk. That was the only thing that I recognised.

As I wondered what happened, I heard footsteps outside the door. I peeked out to see the unimaginable. Two robots were walking down the staircase. And then, in an instant, it all dawned upon me. I was very much in the Brainwave HQ, but in the future. The time machine had worked and it had automatically transported me into the future!

I had an adrenalin rush and my heart beat had doubled. Here I

was, in the future! I took a deep breath and calmed my nerves. I had to be very, very careful. I did not know yet if the robots were friendly or hostile. The first thing I did, was peek into the time machine. The year was 2163, a 150-year jump. "Wow," I thought and quickly ran out of the back door.

The outside world was just as unrecognisable as the one inside. I was stunned to see how humans and machines had merged to form this new society.

Artificial Intelligence (AI) was at its peak. Public transport, infrastructure, everything was automated. As of 2013, AI had the knowledge of a four-year-old. IBM's artificially intelligent supercomputer, Watson, had just been tested to work as a customer service manager in a call centre. It could only respond to customer enquiries. That's all!

I took a moment to thank the science I was taught in school. I could clearly see the connect. All the concepts from my textbooks had enabled humans to build brilliant technologies. Had we not paid attention at school, none of this would have been possible.

Just then, a massive object flew

right over my head. I was jolted out of my thoughts. I looked up and saw a flying car! That was amazing! I remembered that the first flying car that actually worked was built by Waldo Waterman in 1937. Though it worked fine, it generated no interest from customers. And here, there were commercial versions of it everywhere.

In 2013, a U.S. company, Terrafugia Inc., had only revealed its plans to produce a flying car by 2021. "I should get my hands on one of these," I thought.

I was so much in awe of this world that I almost felt like I belonged here. I went on to a public booth with a board that said 'NEWS'. I stood there for a bit and soon, a voice said, "Welcome, would you like a hard copy, or a soft copy?"

"Hardcopy," I replied.

Out of a really thin slit came something that looked like a plastic sheet. This sheet looked a lot like the one we wrap the Brainwave magazine in. I took it into my hands. All sorts of images and text began flashing on it, in florescent blue. This was the new-age newspaper? I was speechless, it was just crazy.

I started reading the headlines:

*You will experience bumper-to-bumper traffic at the Oxford junction between 18:08 to 20:12 hours.*

"How do they know what's going to happen after two hours?" I thought. There was traffic countdown being shown too. "Ah! This means all roads have sensors, and cars have GPS and AI. Each car is

connected to a central system with which it communicates, to predict and improve traffic flow and prevent accidents. The future is so organized," I reasoned and continued reading.

*Digital 'ants' are all set to protect us from cyber attacks.*

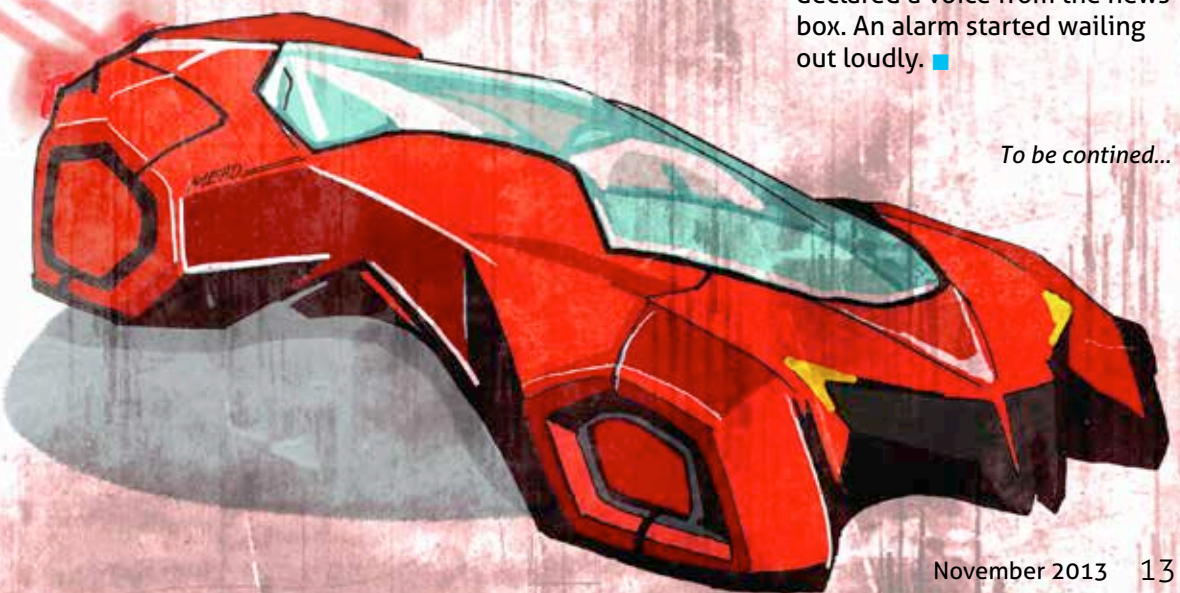
"Superb! No more viruses," I thought

*Super-smart phone AI saves a lady from heart-attack.*

"Wow! Phones are not only equipped with AI, but are also doubling up as medi-assists!?"

While reading this piece of news, I faintly noticed a laser grid form around me. What was happening? I tried to jump out, but the laser grid had trapped me, like it was a chamber. I could not break the force fields. "You are arrested," declared a voice from the news box. An alarm started wailing out loudly. ■

*To be continued...*







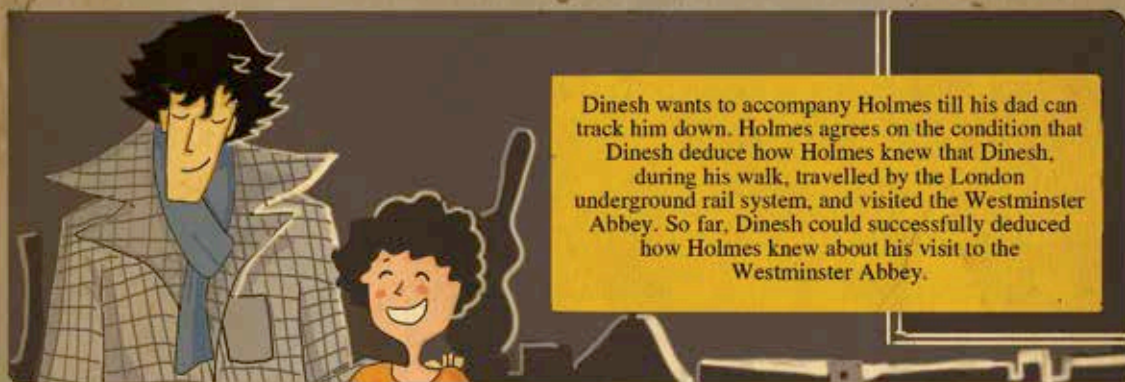
# The Time Travelling Kumars

Sherlock Diaries 6

Written by:  
Sasikanth.C

Illustrated by:  
Sarthak Sinha

In the previous issues, we have seen Dinesh get separated from his parents during their time travelling adventures and land in early 20th century London, meeting Sherlock Holmes in 221B Baker Street. A couple of discussions and a case later, Dinesh is shocked to know that Holmes is planning to retire to bee-keeping in Sussex Downs!



Dinesh wants to accompany Holmes till his dad can track him down. Holmes agrees on the condition that Dinesh deduce how Holmes knew that Dinesh, during his walk, travelled by the London underground rail system, and visited the Westminster Abbey. So far, Dinesh could successfully deduce how Holmes knew about his visit to the Westminster Abbey.

That is very fascinating to know, Mr. Holmes. I would love to learn more about apiculture. But, I am yet to solve the mystery of how you knew that I travelled by the London underground Rail!

Think, boy, think! It's pretty easy.



Please give me a hint, Mr. Holmes. Please!

Hmm ... Well ... One word boy – time.



Got it! I know it now. You calculated the time that I would take if I went around London, from Baker Street to Westminster Abbey on foot, and compared it with the time I actually took.







Whereas, a fountain pen uses water-based liquid ink delivered through a nib. The ink flows from a reservoir through a feed to the nib and then, through the nib due to capillary action<sup>6</sup> and gravity. The nib has no moving parts and delivers ink through a thin slit to the writing surface.

Exactly, Mr. Holmes. The ballpoint pen is more reliable and inexpensive. It has replaced the fountain pen as the most common tool for everyday writing.

Exactly like fountain pens have taken the world by storm now, and replaced the dip pens we owned when we were children.

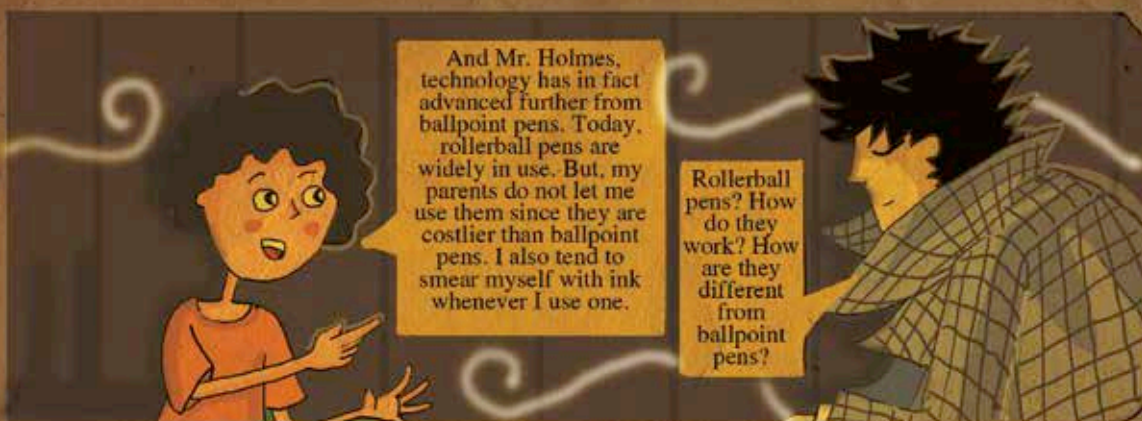
Right, Mr. Holmes. Could you please explain to me how dip pens work?

A dip pen consists of a metal nib with capillary channels, like that of a fountain pen, mounted on a handle, often made of wood. It has no ink reservoir and must be repeatedly recharged with ink while drawing or writing. We do that by dipping the nib in ink after every couple of words. That is why it is called a dip pen.

Precisely.

Oh yes, I have seen them in many period films. They are just like quills.





And Mr. Holmes, technology has in fact advanced further from ballpoint pens. Today, rollerball pens are widely in use. But, my parents do not let me use them since they are costlier than ballpoint pens. I also tend to smear myself with ink whenever I use one.

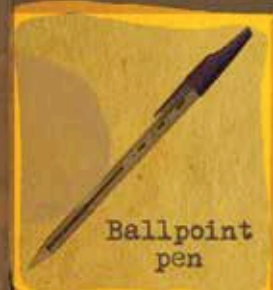
Rollerball pens? How do they work? How are they different from ballpoint pens?

A rollerball pen dispenses water-based gel ink through a tip similar to that of a ballpoint pen.

This ink is easily absorbed by paper than oil-based ink, and the pen moves smoothly across the writing surface. It combines the convenience of a ballpoint pen with the smooth 'wet ink' effect of a fountain pen.

Oh! Fascinating how technology evolves with time.

Speaking of technology, Mr. Holmes, it's not just pens that have evolved in these hundred years. Everything has. In fact, the whole lifestyle has changed. In 2013, we have electric trains, motor cars, TVs, computers, spaceships, ACs, credit cards, and many other things you cannot even imagine!



For example, did you know that the telegram that you so frequently use for communication is no more in use in 2013? Instead, people use mobile phones and emails that help communicate within seconds, and at a fraction of the cost of the telegram.



to be continued...



The Student Board evaluation process has begun. The winners shall be revealed soon! Be on a lookout for their names. For the next six months, these members will work with our editorial team and make a difference to the magazine.

In addition to this, their work will be published in the magazine and they will get to lay their hands on all BW products before anyone else - for free!

At the end of their tenure, they will win certificates and an honorarium of Rs. 1250 each.

[www.bwmag.in/student-board](http://www.bwmag.in/student-board)

# BW STUDENT BOARD



Join us on our fun-do video channel as *Mr. X* performs some amazing experiments and *X-plains* the science behind them.

Mr. X might perform and publish your experiments too! If published, you will win a surprise gift. Just email your experiment in detail to [brainwave@ack-media.com](mailto:brainwave@ack-media.com)



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Artwork: Abhijeet Kini

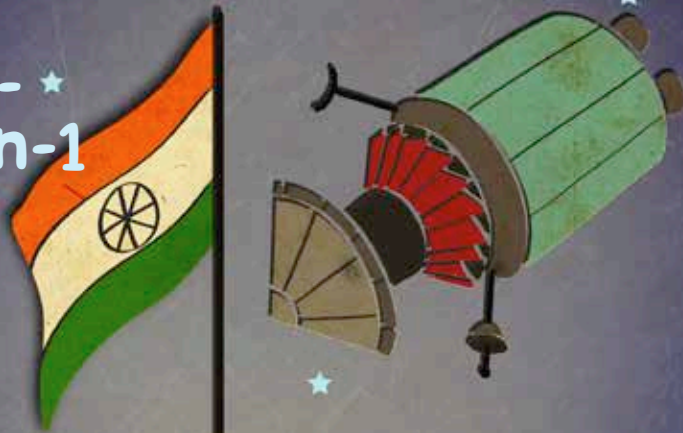


# A Moonific Touchdown - Chandrayaan-1

by Priyanka Talreja

This month has been a very interesting time for technology in India. Why? Let's find out!

Artwork: Soudamini Tamboy



**L**ike we know, Chandrayaan-1 is India's first unmanned lunar probe. This wondrous piece of technology was successfully launched on **22 October, 2008** from Satish Dhawan Space Centre, Sriharikota.

It was on **8 November, 2008** that this spacecraft was successfully inserted into the lunar orbit.

On **14 November, 2008**, the Moon Impact Probe separated from the orbiter and struck the south pole of the Moon in a controlled manner. This made India the fourth country to hoist its flag on the

Moon. The probe landed near the crater Shackleton, ejecting underground soil that could be analysed for the presence of lunar water-ice.

Chandrayaan-1 included high-resolution remote sensing equipment for visible, near infrared, and soft and hard X-ray frequencies. The remote sensing lunar satellite had a mass of 1,380 kilograms at launch and 675 kilograms in lunar orbit.

Chandrayaan was fully functional for 312 days as opposed to the intended two years. After facing several technical issues including

failure of the star sensors and poor thermal shielding, Chandrayaan stopped sending radio signals on August 29, 2009. But during its little time, this space probe had performed wonders.

Chandrayaan mission achieved 95 percent of its planned objectives during its lifetime. Among its many achievements was the discovery of the widespread presence of water molecules in lunar soil.

Standing as one of India's biggest achievement, this spacecraft is something all Indians are proud of. Let's look forward to the [Mangalyaan<sup>G</sup>](#). ■

## CLIMB LIKE A SPIDERMAN

by Pushkar Samant

One fine day, while watching a gecko climb up the ceiling, an idea took birth in Dr. Dodo's genius brain. He observed the gecko closely and discovered that mother nature has gifted it with nano-sized hair-like projections on its toes. These projections, not visible to the naked eye, give the gecko the ability to walk on walls and upside down on ceilings, without falling down.

Dr. Dodo thought of developing a similar phenomenon, where a normal human being could do the same. So, he came up with

a concept, which until then was offered by nature only to geckos and other tiny creatures – nanotechnology, manipulation of matter on an atomic and molecular scale.

Dr. Dodo successfully carried out experiments on sports shoes and hand gloves. He developed finely tuned, sophisticated nano-structured soles that could provide a grip to walk on walls and ceilings. With the help of his new techno tools, Now, Dr. Dodo can easily scale walls like Spiderman. ■

## ROOM OF REQUIREMENTS

by Pushkar Samant



The *room of requirements* at Hogwarts is as popular in the muggle world as in the world of magic. This room is present in the real world, albeit with a few modifications.

We call it Cloud Computing.

One has to be present at Hogwarts in order to get into the room of requirements, right? But in real world, we just need to have a good internet connection. You can be in any part of the world and still access all kinds of data without breaking a sweat.

Also, at Hogwarts, one has to use a unique spell to get into the room. Similarly, in the real world, you need a username and password using which you login to access your work documents, videos, music, books, shops and games.

This real-world room of requirements, Cloud Computing, is the key to the future. In the next few years, we might not have physical schools. Teachers would be teaching from their home and students would be giving their exams from any part of the world. Everything, including homework and classwork would be stored online safely. ■



# Just+ TECH It!

by Pushkar Samant

*Isn't it difficult to imagine a day in our lives without a single gadget? Looks like new and innovative technologies are modifying us into robo-humans!*

## Keep Watching

Snap the *Pebble* smart-watch onto your wrist and it will not only show you the time, but also let you take phone calls, receive smses, and read emails, even when you are away from your mobile or computer. In January 2013, the first smart-watch was launched and till date, more than eighty five thousand of them have been sold. ■



## Computer on eyes

Search engine giant - Google has come up with spectacles fitted with an electronic display, or more accurately, a wearable computer! It is called *Google Glass*. The Google Glass is an optical head-mounted display that projects information in a smartphone-like handsfree format, which can interact with the internet via voice commands. ■



## Twister-Phone

You can fold or twist the screen of this mobile phone however you want, without breaking it! Samsung claims that it will soon make this possible with their new invention, *Samsung Galaxy Skin* that can be bent and twisted in any direction without damage. By next year, LG too says that it is all set to come up with a smartphone that has a flexible and unbreakable display. ■

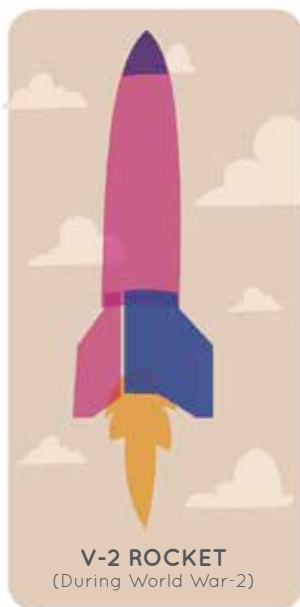




# To infinity... and beyond!

by Pushkar Samant

*The science of space travel has helped humans dream beyond the Earth and hence, is our choice for this month's Golden Gizmo.*



**H**umans have dreamt of spaceflights since antiquity. The latter half of the 20th century made these dreams come true. After exploring the mother planet, mankind took a step into space.

During World War II, the V-2 rocket, a German ballistic missile became the first man-made object to enter space.

After the war, U.S. and Russia were in a race to reach new horizons. Russia launched the first ever satellite Sputnik-1 in 1957. Thus, the new age of satellites began, which opened doors for telecommunication

via televisions.

While unmanned spacecrafts were making their voyages into space, in 1969, astronaut Neil Armstrong took 'a giant step for mankind' and landed on the Moon. In the next ten years, missions to Mars, Jupiter and Saturn were carried out in a quest to bring the universe closer.

The curiosity about alien life became a hot topic for scientists and common men alike. Soon, scientists discovered the presence of water on the Moon, along with other minerals. For further

research and development, The Hubble Space Telescope was carried into space in 1990, and The International Space Station was built in outer space in 1998.

Recent advancements include the rover, Curiosity, landing on Mars after a 9-month long journey, and the space probe, Voyager 1, entering **interstellar space**<sup>G</sup> after a 36+ year journey! But, both are unmanned.

Let's hope that, soon, due to the invention of faster-than-light jet engines, we could travel to infinity and beyond, just like Buzz Lightyear. ■

# Poster

**Today's science,  
tomorrow's technology.**





POSTER

**Today's science,  
tomorrow's technology.**







# Poster







# LIFE OF A SUPERHERO

Idea by Roshan Warriar



**M**y name is Warriar. I was walking in my garden when I tripped and fell down. I ended up landing on and pressing a button that was otherwise covered by thick growth of grass. The ground opened up suddenly and I could see a secret staircase. I climbed down the stairs and came across a high tech hideout. Yes, you guessed it. I soon became a superhero - the leader of a super-team, 'The Cron Rangers'!

One day, the dark vortex began. A huge black hole started appearing, to suck everything in. I called up my partners Bharat, Suraj and Ashwath and grabbed my I-Watch and CR suit. We reached the underwater cave where the cure, the white crystal, that would help us close the

vortex could be found. We retrieved the white crystal and flew to the dark vortex at the speed of light. It was a life or death situation.

That was when I saw my arch enemy Professor Ron Wranger. I fired at him with my warp gun. But the shot had no effect on him due to his reflector shield. He fired a sonar beam at me. I dodged it and aimed a supreme ray at the button on his shirt which was in fact, a camouflaged switch to deactivate his shield. He surrendered and we closed the dark vortex. I had saved the day! ■



Write a superhero science fiction story in not less than 150 words and email it to us at [brainwave@ack-media.com](mailto:brainwave@ack-media.com). Two best entries get to win CROODS DVDs by Dreamworks and Excel Home Videos.



## The world was better without these

*Here is a compilation of three completely-pointless-aimless-gadgets ever invented!*

by Priyanka Talreja



### Marshmallow Shooter

If you go to the market and make an effort to buy a packet of marshmallows; why exactly would you want to shoot them away? The highlights of this gadget are:

- Shoots mini-marshmallows up to 30 feet
- Magazine holds 20 rounds of ammunition
- Shoots any brand of marshmallows

This absolutely useless gadget is available on Amazon for \$17.75 and is very much in stock (for obvious reasons). We officially award our BLAH! award of the year to the Marshmallow Shooter. Three cheers – Hip-hip-Boo.Boo.Boo. ■

### One-touch pizza ordering magnet

Feeling hungry? Go to your fridge and press the magnet on it to instant-order a pizza. Be all set to pile on a few extra kilograms. How much harm can those do anyway?

A Dubai-based pizza shop called Red Tomato Pizza has had the bright idea of creating a one-touch magnet in the shape of a pizza box that places an order when opened and pressed. In this era of technology, this device only encourages humans to become lazier and heavier than they already are. ■



Artwork: Jeeval Patel

### Solar C(r)ap

How would you like to ridicule yourself in public? If you are keen on doing that, please buy the solar cap.

Priced at \$19.99 on Amazon, this cap is also very much in stock. With a mini solar panel on the top, this cap is fitted with a tiny fan that blows warm air in your face. The buzzing of the fan right into your face might help you control your temper. Try it out at your own risk! ■





Winners of various activities in the September 2013 issue are:

Treasure Hunt: **Shreya Ramesh and Shruthi Valayapathi**

Ask Us Why: **Arnav Goel**

Eye See: **Erick Joshua**

Fan Fiction: **Nidhi Deshpande**

Cartoon Network Contest: **Sudarshan Ram, Sadhvi S, Dishita Ashar, Naveen Bhardwaj, B Ysasweni**

Planet Ninjas: **Chitteshwari Satish**

Magic Science: **Anand Iyer**

DIY: **Guruprasad**

Practical Science 2: **Vibhu Ravindran**

Fun-do Band: **No One**

**Chitteshwari Satish** gets nominated for the BW

Student Board. For more details, visit [www.bwmag.in/student-board](http://www.bwmag.in/student-board)

The BW Smartenstein title, certificate and mystery gift for September go to **Guruprasad**. For more details, visit - [www.bwmag.in/category/bw-smartenstein](http://www.bwmag.in/category/bw-smartenstein)

All Fun-do Band captains - ensure that each of your team members visits and registers individually at [www.bwmag.in/fun-do-band](http://www.bwmag.in/fun-do-band) Your team membership will be activated only after that. If you face any issues during the process, write to [brainwave@ack-media.com](mailto:brainwave@ack-media.com)

May 2013 winners will be declared in the July 2013 issue.



## Letters from Readers

Poem: **My Life**  
by **Mehak Kuchal**, via email

Everyone has a unique life,  
For that, one should thrive.  
Mine is also different from all,  
In which I sometimes stand and at times, fall.

I love my life,  
In the way it is!

Everyday it rises with different rays,  
Showing me different paths and ways.  
I grasp new things,  
And learn to fly even without wings.

I love my life,  
In the way it is!

It has given me true friends ,  
A life in which a relationship never ends.  
It has given me an excellent supporter,  
In the form of family who help when it matters.

I love my life,  
In the way it is!

Dear Mehak,  
The thing I admire the most about you is your perseverance. Though we never published one before, you have been sending poems to us relentlessly, month on month. They are lovely poems, all of them. We just could not publish them because they were not related to science.

This poem, however, is so good that we are compelled to publish it. It talks about how winning and losing is a part of life, how you learn from it every day and grow, and the importance of family.

Keep writing!  
**SK, Editor**



All was just right until, one fine bright day,  
a strange malfunction caught everyone's eyes ...



Suddenly, before anyone realized it, the malfunction spread like a  
contagious disease. What really was happening? Knew not a single being!



This was happening across  
the globe, with different  
machines in different ways!



The printers were in a bad state. Eating  
paper had become their staple diet!







This issue grew bigger and bigger, bringing things to a complete halt.

SIGH! WE HAVE BEEN STUCK UPSIDE DOWN FOR A DAY NOW.

At long last the experts were called. "What did they have to say?" wondered one and all.



They definitely had a weird answer to what had caused the mayhem ...



THE MAGNETS HAVE NOW CHANGED THEIR BEHAVIOUR. NOW, ALL LIKE POLES ATTRACT!

The shocking news left everyone aghast. But this had been happening for a reason. The obvious was right there, but no one had seen it.



North attracts North

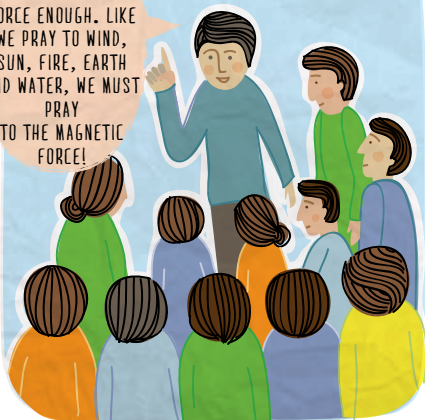
**BREAKING NEWS**

Magnetic poles are shifting faster than ever before.

Similar poles now attract!

Some smart humans got together and arrived at a conclusion...

WE HAVE NOT REGARDED MAGNETIC FORCE ENOUGH. LIKE WE PRAY TO WIND, SUN, FIRE, EARTH AND WATER, WE MUST PRAY TO THE MAGNETIC FORCE!



Across the globe, places of worship were built. The magnet god had topped the praying list. What the future held was uncertain. So, praying to magnets was their only practical solution!

HOPEFULLY, THE MAGNET GOD WILL HEED TO OUR PRAYERS.



The End.



# The Techies Tapping

by Priyanka Talreja

*Lined up in November are some amazing tech events, across the globe. They are tapping us for attention! Time to turn around and know about them.*

## Social Media Within the Military and Defence sector

20 - 21 November, London UK

This interesting event showcases the latest in social media and educates attendees about how to use it, from a military and defence perspective.

This is the third year and the highlights include:

- Discover how to harness the global power of social media, the new weapon in the online battlefield.
- Learn and network with experts from around the world who shape and influence the social media landscape.
- Explore the latest social media platforms shaping the future and their use.
- Understand the latest on data protection, data mining and how to stay safe from being monitored by the enemy.
- Analyse the most effective way of using social media in a military environment.

With noted military pros who work at the heart of social media participating, this event sounds promising for the future of defence. ■



*The CNN Centre, which houses the HQ of Turner Broadcasting (Cartoon Network)*

## Forecast '13

6-7 November, Geneva

FORECAST is an annual seminar dealing with broadcast technologies. Each year, this event brings together broadcasters, network operators, regulators, policymakers, industry stakeholders and researchers from the broadcasting industry.

With the motive of shaping a broadcasting future, this tech event is here to initiate change.

Last year, this event covered crucial topics such as:

- Dynamic Broadcasting
- On the road to a hybrid world of TV and web - challenges and lessons
- The case for Going Green ■



# Magic Science - Disappearing Water

by Kayomarz Bacha

*This is another very simple and fun-to-do magic trick which is sure to amaze you. It does need a little prior preparation, but will be worth the effort.*



Some Diapers rely on Super Absorbent Polymer (SAP) gel crystals - a key ingredient for absorbency

## To perform this trick, you need

- 1 or 2 diapers
- A non-transparent glass
- A pair of scissors and
- Some water

Make an insertion on the inside of the diaper and you will notice a layer of transparent crystals surrounded by cotton. Carefully shake the diaper and drop all these crystals on the table. Remove any small bits of cotton that you find among them. Then, carefully collect all these crystals in the glass. The difficult part is over.

Note: Do this when your audience isn't there. They should not know that the glass contains crystals.

Now for the fun part. Tell your audience that all you have is an empty cup, pour a

little water to fill up  $\frac{1}{4}$ th of the glass. Talk to the audience for 10 seconds. Ask them questions as to what they think will happen or chant some magical slogans. You need to do this because it takes a few seconds for the crystals to react with the water.

Now, gently tilt the glass upside down and presto! The water has disappeared. Your audience will be amazed. But as you and I know, there is always science behind it.

The diaper crystals are made up of sodium polyacrylate ( $C_3H_3NaO_2$ )<sub>n</sub>. They are great water absorbing polymers and hence, are used in diapers. They absorb the water and convert it into a form of jelly that sticks to the bottom of the glass.

Hope you have fun performing this trick! ■

---

Do you know any such science tricks? Email them to us at [brainwave@ack-media.com](mailto:brainwave@ack-media.com)

The most original response can win you a cool ACK comic book!

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# Rusty Fundamentals

by Kayomarz Bacha



## You need:

- A few new iron nails
- A transparent glass
- Synthetic white vinegar
- Bleach
- Water
- A spoon

**Caution:** A scratch from a rusty nail is dangerous. Perform under adult supervision.

## METHOD:



1

Fill half the glass with water



2

Add five spoons of bleach to the water



3

Add five spoons of vinegar to the bleach solution and stir well



4

Wait for about 30 to 60 seconds



# 5

Add the nails,  
stir well and wait

You will notice that within 10–15 minutes, the nails in the glass start getting rusty.

**Note:** You can let the nails be in the solution overnight and the rusting process would be more distinctive through the colour of the nail and the solution surrounding it.

In the morning, remove the nails from the glass and observe the degree of rust on them.

## Why did this happen?

In this case, a chemical reaction called oxidation takes place. Rust is created when iron and oxygen react. Iron molecules combine with molecules of oxygen to form rust ( $\text{Fe}_2\text{O}_3$ ).

Oxidation takes a few days with the help of just water and air. Adding bleach and vinegar helps speed up the process.

The chemical equation for this reaction is:



Rust is harmful because it reduces the structural strength of the object. Metals are usually treated with chemicals to prevent them from rusting. For example, the layer of paint on a car shields the metal body of the car from air and water, and prevents rusting. ■

Mention five ways in which we can prevent metals from rusting. Email your answers to [brainwave@ack-media.com](mailto:brainwave@ack-media.com). The best answer wins two cool ACK comic books!



Rangeela Tempera Colours  
is available now with

# Liquid Gold

To celebrate this, **Rangeela** is giving away amazing hampers!  
All you have to do to win this hamper is answer the question below:

Match the following

**BRAINWAVE**

1



Chandrayaan

2



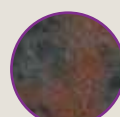
Salt water

3



The transmitter

4



Rust

**A**

has a  
round metal  
disk called  
diaphragm.

**B**

is created  
when iron  
mixes with  
oxygen.

**C**

is India's first  
unmanned  
lunar probe.

**D**

is a good  
conductor  
of electricity.

Send the correct complete sentence to  
[brainwave@ack-media.com](mailto:brainwave@ack-media.com) and be all  
set to win a cool hamper!

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## THE SMARTIES THE DARK SPELL

STORY: PRIYANKA TALREJA  
ART AND LETTERING: SARTHAK SINHA

ALL'S NOT WELL AT THE BW LABS ...

SKREE! GOING INTO A TRANCE IS OF GREAT CONCERN, DR. DODO. WE NEED TO LOOK INTO HER VISIONS.

YES, ARBY. BOTH THE TIMES THIS HAPPENED IN THE PAST, IT MEANT THAT SOMETHING WAS THREATENING HUMANITY.

I SENSE A PATTERN IN SKREE'S VISIONS, DR. DODO. BOTH HER PREVIOUS VISIONS WERE RELATED TO TECHNOLOGY. IN ONE, TECHNOLOGY ITSELF WAS THE PROBLEM AND IN THE OTHER, IT HELPED US SAVE HUMANITY!

EVEN WITH ALL MY SUPER-POWERS, I CANNOT LOOK INTO SKREE'S VISIONS!

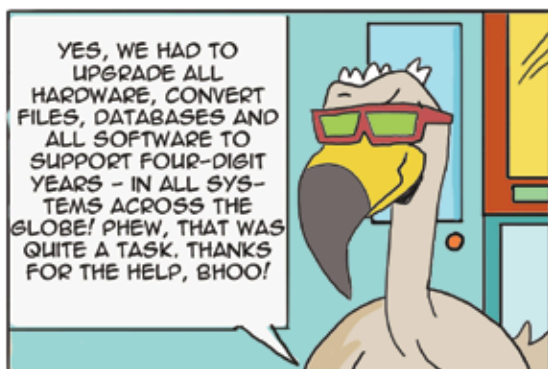
THAT IS WHY DR. DODO CREATED THIS MIND-MAPPING GIZMO. WE CAN ALL TUNE-INTO SKREE'S VISIONS AND HELP HUMANITY

YES, WITH THE MIND READER WE CAN ALL TUNE INTO SKREE'S VISION. HOPEFULLY, ARBY'S BRILLIANT HYPOTHESIS WILL HELP US DECODE IT AND SAVE HUMANITY! I JUST HOPE THAT WE ARE NOT ALREADY LATE!

SKREE'S FIRST VISION WAS VERY SCARY DR. DODO. IT WAS THE Y2K BUG! I CLEARLY REMEMBER.

OH YES! THE YEAR 2000'S SOFTWARE PROBLEM. THIS WAS WHEN ALMOST ALL COMPUTER PROGRAMS USED 2 DIGITS FOR A YEAR INSTEAD OF 4. THEN, WITH THE CHANGE OF THE CENTURY THE PROGRAMS COULD NOT DISTINGUISH BETWEEN THE YEAR 2000 AND THE YEAR 1900, AND A MASSIVE DATA DANGER WAS PREDICTED!







# Treasure Hunt!

Hidden behind this scrambled word is the theme of our January 2014 issue! All you have to do is unscramble it and win the treasure!

ECNICSE FO TRSPOS

Clue: It relates science to something we all love doing.

**LEAD▶START**  
Publishing

**2 WINNERS  
GET 2 COOL  
BOOKS,  
EXCLUSIVE  
FROM  
LEADSTART  
PUBLISHING!**



## *Be a Smartenstein!*

We run more than ten activities and contests in each issue. They can win you many exciting prizes.

Participate in all the activities of an issue, and you can win a merit certificate, the title 'Smartenstein' and a mystery gift - every month!

There are more than 10 activities and contests in this issue. Turn to the index on [p02](#), check the features marked with a '★' out, and participate in them.

What are you waiting for? We even have cool gifts from Hobby Ideas, Dreamworks, Leadstart Publishing and Excel Home Entertainment for you!

[www.bwmag.in/category/bw-smartenstein](http://www.bwmag.in/category/bw-smartenstein)



# Corn for Cars, Jatropha for Jets.

by Pushkar Samant

*This story was sent to us when the writer travelled into the future...*

Oh, it is so different and beautiful, nice and clean to be here! Indeed, things have changed drastically. Astonished, I started looking for a petrol pump to fuel my bike. As soon as I started the bike, two robocops came out of nowhere and took me into custody, before I could say anything or explain anything.

I was taken into a plush modern looking institute, named *The Biofuel Research and Development Centre* and questioned for over an hour. Finally, after I explained everything about myself, the facility head explained the reason for arresting me. It was compulsory to run vehicles on biofuels - no petrol and no diesel was allowed. While I was digesting what he said, he started explaining further.

"We no more use fossil fuels. We shifted to biofuels, which can be easily obtained from crops like wheat, rice, corn, sugarcane,



Drax Power Station Bio Fuel Production Plant, Goole, East Riding of Yorkshire, England.

jatropha and other non-polluting sources," he said. Surprised, I asked, "Has it really become possible?"

"It is no more a big deal. We get bio-diesel from wheat and bio-petrol from sugarcane. By refining and fermenting the crops, ethanol is obtained and used as fuel. You just add a few kilograms of crop to the crushing tank of the vehicle," he explained and gave me a few litres of bio-petrol.

When I thanked him, he said, "Thank you for researching it extensively in 2013. Your preliminary research served as a base for the advancements you see," and bid me farewell.

I started back to the present with a renewed vigour to continue my research. ■



Miscanthus Bio Fuel crop

Name any five biofuels. Research and email them to us at [brainwave@ack-media.com](mailto:brainwave@ack-media.com) to win a nomination to our Student Board and a surprise gift!





by Srinath Perur

## Who discovered Science and why was it named 'Science'?

-Vidhu Raturi

Humans have been curious about the world for a long, long time. The earliest people must have wondered about the sun, the moon and the stars, about animals and plants, and even about themselves. Even if they didn't call it 'science', they observed, experimented and arrived at definite conclusions about the world.

What we call science today used to be clubbed with other forms of knowledge in the past. The person we now call a scientist was, for a long time, simply known as a scholar or a philosopher, across various cultures. The English word 'science' comes from the Latin word 'scientia' meaning knowledge. It has been in use in its modern sense only for the last two or three hundred years. The word 'scientist' was



*The School of Athens painting by the Italian Renaissance artist Raphael. Commentators have suggested that nearly every great Greek philosopher can be found within the painting, but determining which are depicted is difficult.*

first used by William Whewell in 1834.

Similarly, the word technology, which describes knowledge put to practical use, comes from the Greek word 'tekhne' meaning 'skill'. ■

## Why does water become cold when stored in a clay pot?

-Mukund Rao



*The Yarmukian culture is a Neolithic culture of the ancient Levant<sup>C</sup>. It was the first culture in Prehistoric Israel and one of the oldest in the Levant to make use of pottery. The pictures are from excavations taken between 1989-1990 and 1998-2004*

Some of the water in a clay pot moves to the outer surface of the pot through tiny pores in the clay. This water evaporates, absorbing heat from the surroundings and making the pot cooler. This is the same reason your skin feels cool when you sweat and a breeze comes along.

Let us take a moment here, to note that technology is not all about lasers and space-ships! Stone tools and pottery were also high-tech once upon a time. In fact, pottery is one of the oldest forms of technology known to man. The oldest clay pots that humans have discovered date back to 20,000 years ago! ■

Have a burning question? Email it to us at [brainwave@ack-media.com](mailto:brainwave@ack-media.com) with 'Ask Us Why' as the subject. The best question gets published and wins two cool Amar Chitra Katha comics!



**GRAPHIC  
NOVEL**

# **TIME GLIDERS**

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Join our team of time travellers from 2550 A.D.  
whose mission it is to discover and learn more about  
our Universe!

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# Meet the team



By 2550 A.D., time travel has been perfected.

This leads to the Time Glider project, run by a consortium of science and engineering departments from all over the world. The aim is to gain a better understanding of certain difficult, science-related issues. There are various Time Glider teams, but the first mission belongs to TG-1, the spacecraft commandeered by professor Patel.

Time Gliders Command has one directive: TG teams are assigned to discover and explore, but are under no circumstances allowed to interfere with human history. This may cause uncontrollable ripple effects that may jeopardize the very future existence of the Time Gliders agency!

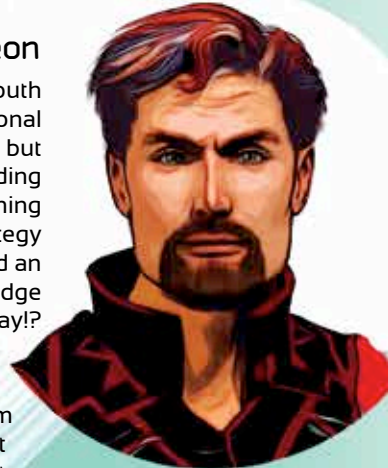
## Professor Patel

Commander of TG-1, and co-founder of the International Time Gliders Agency, he is commonly known as "Prof". Born in Kolkata, India, he boasts of several Nobel prizes in the natural sciences. His specialty is quantum physics and string theory, frequently causing him sleepless nights. It is no secret that Prof loves hot curry, which, according to him, helps him "to think better".



## Deon

Pilot, and in charge of security. Born in Pretoria, South Africa, Deon is a new recruit from the International Space Flight Academy, and ready for adventure but tends to be somewhat impulsive at times, finding himself in dangerous situations. Deon loves anything that is fast. As a kid, he was a champion in strategy games on the Play Station 999, and developed an interest in human history. Who knew that his knowledge on this subject would come in handy someday!?



## Liz

Engineer and data analyst. Born and raised on a farm in Australia, she loves helping her dad fix equipment rather than playing with dolls. She sometimes got into trouble at school after altering machines to "improve" them without permission! Liz developed a special interest in nanotechnology and endeavors to one day receive the Nobel Prize in this field.



## Quasar

Logistics and timeline navigator. Quasar is, well, basically from all over the world. He was conceived in a Japanese robotics laboratory, but developed further in India. Most of his parts are from China, but he was finally assembled in Germany. Having a limited capacity to experience human-like emotions, it is no wonder he is wrestling somewhat to find his own identity. Quasar has a special taste for Castrol lubricants as it helps keep his joints in tip-top shape.





# TIME GLIDERS

Story & Art: Cobus Prinsloo

## Episode 05 Prehistoric times

Previously ... TG-1 makes an emergency landing in the Cretaceous period of Earth's history. While exploring their surroundings, a Quetzalcoatlus gets hold of Quasar.

Can't get my rocket pack out - the birds' grip is too tight! I should try something else.

I'll shoot down that critter!

No! You might hit Quasar. I'm sure he's got a few tricks up his sleeve.

Anyway, that Quetzalcoatlus will find out soon enough that androids are not very tasty.

How will you react to some shock treatment... hmm?

Free!

Darn it - my jet pack is jammed!

KA-THUD

Quasar! Are you all right?

Negative. My right thigh is out of its joint.

Let Deon and Liz help you back to the ship and assess the damage.

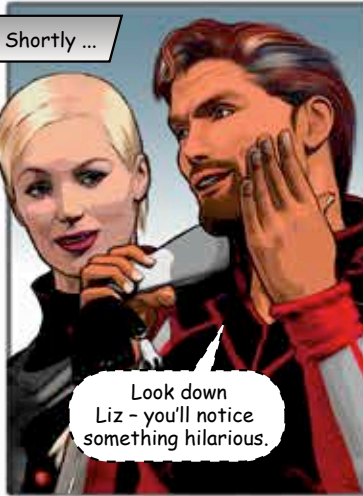




In the meanwhile, I will wrap up here - it will be dark soon.

Come on, Quasar.

Shortly ...



Look down Liz - you'll notice something hilarious.



It looks like Quasar had such a big fright that he couldn't contain himself.

Hie hie hie

Gmf ... g...giegie



Shut up and help me get to my quarters! I am leaking lubricants, you idiots!



That... was very unlike Quasar.

I think he sustained more damage than is visible.



That evening...



Hmm ... We'll take it one step at a time. We'll come up with a plan, I'm sure. How is Quasar?

Professor, the equipment to help fix atmospheric engine 4 will be ready by tomorrow morning.

I am just concerned about how the TG-1 is going to take off once we're ready to depart - given the vessel's current inclination.

Quasar is undertaking repairs on himself. It would seem he also sustained damage to his emotional subroutines, because he's developed some rather ... nasty ... personal traits!



Phew, I just hope he is willing to fix his emotions as well, otherwise we are going to have an unpleasant trip home.

You know, I was somewhat surprised by, given the height of his fall, the little damage he actually sustained.

Aha! I think this reminds me of that theory of mine. Let's call Deon before I continue.

Remember that I explained the difference between weight and mass. The huge dinosaurs of this time will have a constant mass wherever they exist.

No modern land animal made of normal flesh, bones and ligaments can carry a weight of up to 70000 kg and still be able to move about. To give you an example - railway box trailers are made of steel alloys to be able to carry a weight of 30000 kg.

Boy, look how small a human is against this thing!

What if ... the gravity of Earth in this Cretaceous era is weaker than in our modern era?

Well, we've seen 'em - they are quite alive and kicking, aren't they?

Since Earth was formed, its mass of  $5.98 \times 10^{29}$  hasn't changed. But if that mass had been contained by a much larger Earth, gravity would have been lower.

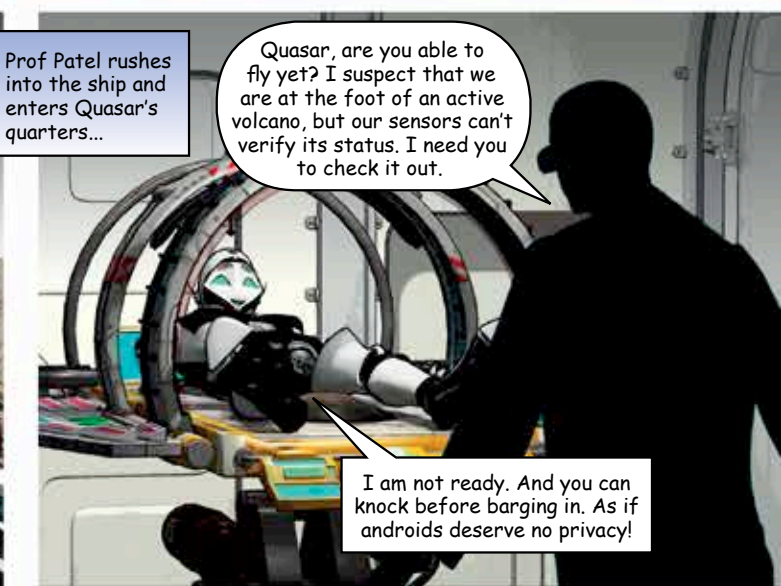
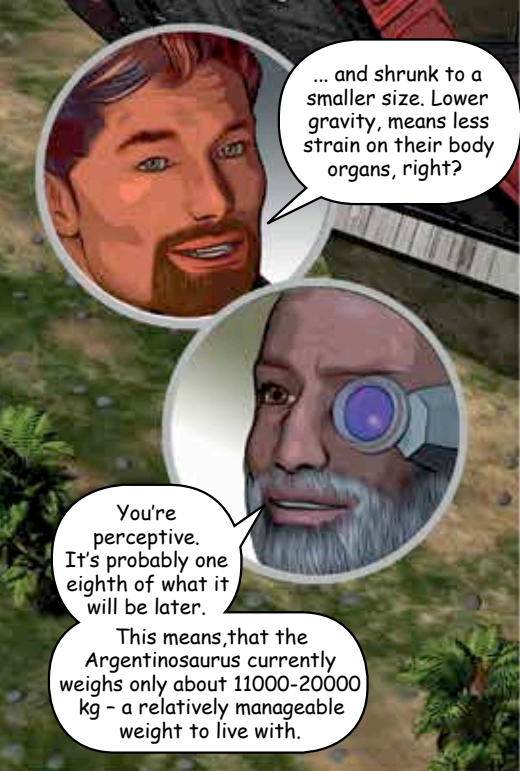
How could this be?

This way, the weights of large animals would also be less.

But why bigger?

Well, the primordial Earth would have been less dense, but as it cooled down over many, many years, it would have compacted and ...





To be continued.



**p8**

**Endemic:** A disease or condition that is regularly found among particular people or in a certain geographic area.

**p9**

**Oncology:** The branch of science that deals with tumours and cancers. 'Onco' means 'tumour' or 'mass', while '-logy' means 'study'.

**Prosthetics:** The branch of medicine that deals with production and application of artificial body parts.

**Neuroprosthetics:** Science that connect prosthetics to our nervous system and supplements or replaces functions lost due to diseases or injury.

**Bionics:** In medicine, bionics means the replacement or enhancement of organs or other body parts by mechanical versions.

**CT and MRI scans:** CT scan is x-ray scanning to study the human body, while MRI stands for 'Magnetic Resonance Imaging' and uses radio waves and strong magnets to relay information to a computer.

**Laparoscopic Surgery:** A modern surgical technique in which operations in the abdomen are performed through small incisions (usually 0.5–1.5 cm) instead of the larger incisions needed in regular surgeries, through the use of images displayed on TV monitors to magnify surgical elements.

**Natural Orifice Surgery:** A rapidly evolving modern surgical process that uses a natural orifice such as the mouth to perform the procedure.

**Remote Surgery:** The ability of doctors to perform surgery on patients even though they are not physically in the same location.

**p16**

**Capillary Action:** The ability of a liquid to flow in narrow spaces without the assistance of, and in opposition to, external forces like gravity.

**p19**

**Mangalyaan:** India's space mission to Mars.

**p22**

**Interstellar Space:** The physical space within a galaxy not occupied by stars or their planetary systems.



## Sci-Q Time

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1. What is a Quetzalcoatlus
2. What is bio-fuel?
3. What is nanotechnology?
4. What is CGI?
5. What is open heart surgery?

oooooooo

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# Rust removal

by Kayomarz Bacha

**R**ust, as we know, is a result of a chemical reaction between iron or steel, and oxygen.

But is the reaction reversible or irreversible? To answer this question, all you need is a rusted nail and some vinegar.

You may find a rusted nail outside or around the house, if you cannot find one you can make one. Look at the DIY in

this issue to know how to.

Now, place the rusted nail in a glass and fill it half with vinegar. Within a couple of hours, you will notice that the nail slowly starts becoming rust free. After about 24 hours, the nail will be completely rust free.

Why did this happen? Research and send us your answer, along with the chemical equation. ■

1



2



3



4



**Caution:** A scratch from a rusty nail is dangerous. Perform under adult supervision.

Email your answers to [brainwave@ack-media.com](mailto:brainwave@ack-media.com).  
The most original response can win you a cool ACK comic book!



# The New World of Cosmetics

by Priyanka Talreja

*Technology has caused many things to change and one of them is the cosmetic industry. How has this change affected the mindset of the common man? The curtain raises right now.*

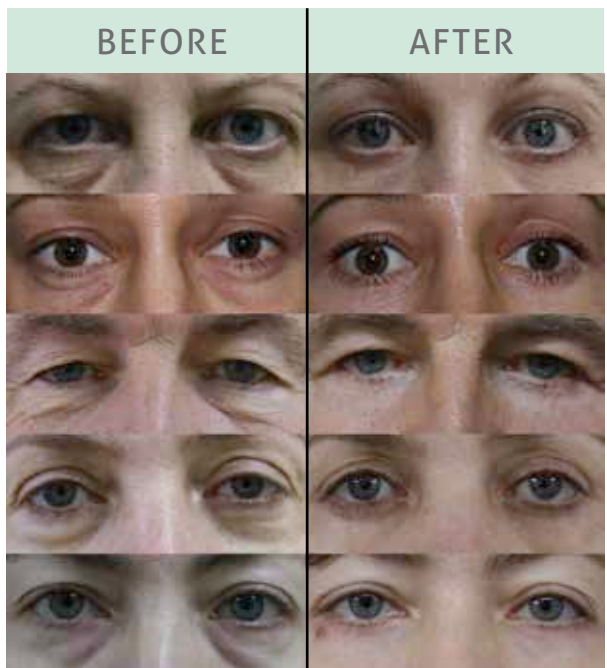
Let's begin with understanding what plastic surgery is. A plastic surgery is called thus, not because a lot of plastic is used in these surgeries; but because the adjective plastic denotes sculpting. So, think of plastic surgery as a surgery to sculpt parts of the human body. These surgeries are nothing but the medical process of 'correction' or 'restoration' of form or looks of human body parts.

There are many kinds of plastic surgeries. While the most common ones are the cosmetic surgeries, other plastic surgeries are used to reconstruct damaged parts, treat burns, etc.

Cosmetic surgeries are optional procedures performed on normal parts of the human body with the only purpose of improving a person's appearance or removing signs of ageing.

Many celebrities across the world have accepted cosmetic procedures with open arms for many years so that they can look better on screen.

With access to better technology and due to less complexity of the procedures,



*Blepharoplasty, the plastic surgery operation for correcting defects, deformities, and disfigurements of the eyelids; and for aesthetically modifying the eye region of the face*

Image source: Wikimedia Commons

plastic surgeries are getting cheaper and more popular around the world. Many commoners have started accepting these procedures too, in their quest to look glamorous. Even in Asia, cosmetic surgeries have become an accepted practice. Countries such as China and India have become big cosmetic surgery markets.

This rage, has pushed the British Association of Aesthetic Plastic Surgeons (BAAPS) to urge lawmakers to ban all plastic surgery related advertising. BAAPS president Fazel Fatah said, "Over the last decade, we have worked tirelessly to educate the public on the many aggressive marketing gimmicks that not only trivialise surgery, but also endanger the patient." If gone wrong, plastic surgeries can result in permanent facial numbness or even paralysis. ■





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## WHAT IS BRAINWAVE?

Brainwave is a children's science magazine from the house of Amar Chitra Katha and Tinkle.

We understand that each child has a different aptitude and love for science. Hence, we simplify science into forms that excite them - comics, stories, fun-do activities, contests and fascinating facts.

**Give your child a Brainwave, and science will be just another game!**